

REMARKS

This Amendment is in response to the Office Action dated September 9, 2008, in which claims 1-4 and 10-19 were rejected. Applicant respectfully requests reconsideration and allowance of all pending claims in view of the following amendments and remarks

I. DRAWINGS

The drawings were objected as allegedly not disclosing the features of claim 1, specifically for the elements “the axis” and “a direction perpendicular to the axis”.

Accordingly, Figure 3 is amended to represent an axis of a parasitic wire, and a direction perpendicular to this axis.

No new matter has been added since the amendment does not modify any structural features of the antennae but merely adds reference lines to the drawings.

II. CLAIM REJECTIONS UNDER U.S.C. §112

Claims 1-4 and 10-19 were rejected under U.S.C. §112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In line with the Examiner’s assumption, claim 1 has been amended so as to clearly point out that the width referred to in claim 1 is “the width of each of said parasitic wires”.

Also, “the wires” in claim 1, line 9 (in previous version of claim 1) refers to “said parasitic wires”.

The Office Action also suggests there is no support in the specification or drawings for the “axis” or the direction perpendicular to the axis. Figure 3 is amended to illustrate these reference lines.

The Office Action also suggests there is no antecedent basis for “said associated radiating wire.” Claim 1 mentions in its preamble that the helical antenna includes “two radiating wires,

each of them being connected by coupling to an associated parasitic wire". (Emphasis added). One can derive from this sentence that a parasitic wire is coupled with an associated radiating wire.

In view of the above, the current wording of the new set of claims has been amended accordingly.

Therefore, Applicant respectfully requests that claim rejections under §112 be withdrawn.

III. CLAIM REJECTIONS UNDER U.S.C. §102(b) and §103(a)

Claims 1, 3, 11-12, and 14-16 are rejected under U.S.C. §102(b) as being anticipated by Fillipovic, U.S. Patent No. 5,990,847.

Claims 1, 3-4, 10-17 and 19 are rejected under U.S.C. §103(a) as being allegedly unpatentable over Fillipovic, U.S. Patent No. 6,278,414, in view of Fillipovic, U.S. Patent No. 5,990,847.

Claim 2 was rejected as being allegedly not patentable over Fillipovic, U.S. Patent No. 6,278,414, in view of Fillipovic, U.S. Patent No. 5,990,847.

Claim 18 was rejected as being allegedly not patentable over Fillipovic, U.S. Patent No. 5,990,847 in view of Louvigne.

Applicant considers that new independent claims 1, 20 and 21 are new and non-obvious in view of Fillipovic 847.

A. **Fillipovic '847**

Fillipovic '847 discloses a coupled multi-segment helical antenna. In the embodiment of Figure 8A shown below, the antenna comprises several coupled radiators 804, each coupled radiator 804 comprising two radiator segments 708, 710 positioned in close proximity with one another so that they are electromagnetically coupled.

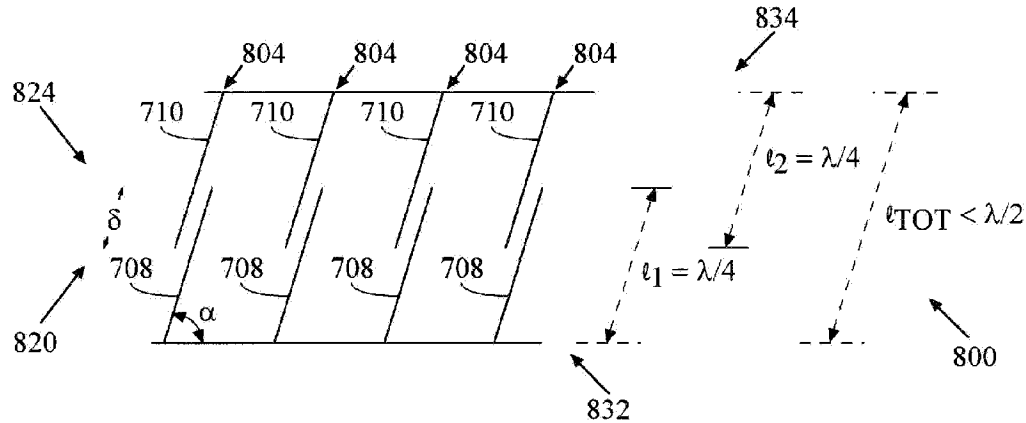


FIG. 8A

Fillipovic '847 mentions (column 8, lines 12-14) that by increasing the amount of overlap δ between segments 708, 710, the coupling between the segments 708, 710 increases and the length of segments 708, 710 increases as well.

In the embodiment described in relation to Figure 2B, segments 708, 710 are connected together mechanically at the far end (col. 8, l. 2 to 11). However, in that case, the resulting configuration is that of a conventional helical antenna such as illustrated in Figure 3.

The unique aim of the arrangement disclosed in Fillipovic '847 is to provide a helical antenna of reduced size, not to increase its bandwidth.

B. Present Application

An embodiment of the present application has a different aim, which is to broaden the bandwidth of the antenna by associating physically at least one parasitic wire to a radiating wire (claim 1, page 5 lines 15-22), without any reduction or increase in the length of the wire since the parasitic wire is connected to the ground. It is to be noted that without such a parasitic wire, the bandwidth of the antenna of the present application would be reduced.

The arrangement disclosed in Fillipovic 847 consists in splitting up the radiating wire in two magnetically coupled segments 708, 710. The removal of the so-called parasitic segment 710

would result in the antenna not being able to operate correctly, or only at very high frequencies.

C. Claim Amendments

Claim 1 is amended to combine the features of previous claims 1 and 2.

New claim 20 combines the features of previous claims 1 and 19.

New claim 21 is similar to previous claim 1, but further includes the feature, “wherein respective ends of said radiating wires and parasitic wires are situated in two parallel planes, which are separated by a distance equal to an axial length of the antenna.”

D. Fillipovic ‘847 Fails to Disclose Claim 1

Fillipovic ‘847 does not disclose or suggests that “*the ratio between the width of each of said parasitic wires and the width of said associated radiating wire is less than or equal to 0.15,*” as recited in amended claim 1 (taken from previous claim 2).

In contrast, the embodiments described in Fillipovic ‘847 disclose that the width of each of the parasitic wires is equal to the width of an associated radiating wire.

Amended claim 1 is thus new and not obvious in view of Fillipovic ‘847.

The Applicant disagrees with the Examiner’s analysis in relation to original claim 2 (point 8 of his analysis).

Indeed, in column 9, lines 23-29 of Fillipovic ‘414, it is not disclosed or suggested that the width of the parasitic wire is smaller than the width of the associated radiating wire.

As clearly shown in Figures 11A and 11B of Fillipovic ‘414, the width of the parasitic wire is equal to the width of the associated radiating wire. These figures disclose the fact that the U-shaped parasitic portion may be configured differently, i.e. may be disposed along one side of the radiating portion (Figure 11A) or may surround the radiating portion (Figure 11B). By changing the shape of the parasitic portion (and not the width of the parasitic wires), the bandwidth of the antenna may be changed. Figures 11A and 11B do not disclose that the width of the parasitic wires may be different from the width of the radiating wires.

Thus, Fillipovic 414 does not disclose or suggest that “*the ratio between the width of*

each of said parasitic wires and the width of said associated radiating wire is less than or equal to 0.15.”

Amended claim 1 is thus new and not obvious in view of Fillipovic ‘414 alone or in combination with Fillipovic ‘847.

New dependent claims 3-4 and 10-18 are also patentable at least due to the fact they depend from amended claim 1.

E. Fillipovic ‘847 Fails to Disclose Claim 20

The Applicant disagrees with the Examiner’s analysis in relation to original claim 19 (now re-written in independent form as new claim 20).

Indeed, in column 2, lines 15-20 of Fillipovic ‘847 and in the description as a whole, it is not disclosed or suggested that *“said radiating wires and parasitic wires have a same length, substantially different from a multiple of a wavelength corresponding to a mean frequency of a transmission band of said antenna, divided by 4.”*

The length of the segments 708, 710 in Fillipovic ‘847 is $\lambda/4$.

An advantage of the present application is that *“the radiating wires have a length which is substantially different from a multiple of a wavelength corresponding to a mean frequency of a transmission band of said antenna, divided by 4.”* As mentioned in the description of the present invention: *“Thus, the opening of the antenna can be used, unlike in the known dipole antennas with a parasitic wire, which have a multiple length of $\lambda/4$ where λ represents the transmission wavelength of the antenna.”*. One example of a radiating wire length is given in the description of the present application, i.e. 0.83λ .

New claim 20 is thus new and not obvious in view of Fillipovic ‘414 and ‘847.

F. Fillipovic ‘847 Fails to Disclose Claim 21

Figure 3 of the present application, which is shown below, clearly discloses that the respective ends of said radiating wires 31 and parasitic wires 34 are situated in two parallel planes which are separated by a distance equal to the axial length of the antenna.

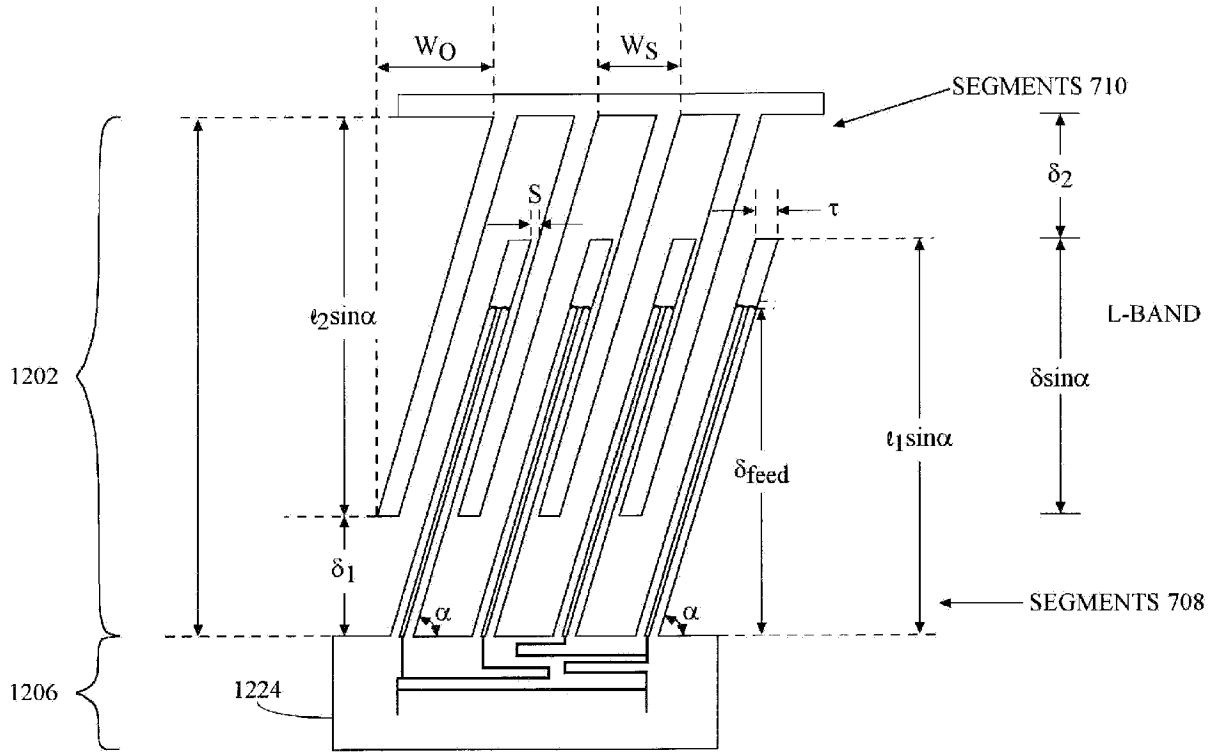


FIG. 12

Indeed, it is not disclosed or suggested in Fillipovic '847 that the gaps δ_1 et δ_2 shown in figure 12 above are equal to zero or that the segment overlap δ is equal to the length of the radiator portion 1202.

In Fillipovic '847, the respective ends of said radiating wires 708 and parasitic wires 710 are thus situated in four parallel planes.

In the present application the overlap between the radiating wires and the parasitic wires is equal to the axial length of the antenna (L_1 in Figure 1). The respective ends of said radiating wires 708 and parasitic wires 710 are thus situated in two parallel planes in the present application.

As mentioned in the description of the present application, the technique implemented in the present application provides an antenna of reduced size and increased bandwidth, without any

reduction in the length of the wires.

New claim 21 is thus new and not obvious in view of Fillipovic '847.

IV. CONCLUSION

Concerning the rejections based on the cited prior art, the Applicant considers that the newly cited Fillipovic '847 document is very far from the present claims (for the reasons detailed above) and does not disclose or suggests all of the features of new claims 1, 20 and 21 for the reasons mentioned above.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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